

## ER Site No. 56: Old Thunderwells (Thunder Range)

ADS: 1335

Operable Unit: Southwest Test Area

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### Site History

ER Site 56 is located near the southwest corner of Kirtland Air Force Base (KAFB), east of Building 9966, south of Magazine Road near the [Large Shock Tube \(ER Site 89\)](#) and west of the SNL Solar Power Tower. The site is actually two areas which were used for the same purposes at the same relative time. For all intents and purposes, though, ER Site 56 is considered one site. It is on land which is permitted to the Department of Energy from the Air Force. The site occupies approximately .86 acres and is essentially flat, with a slight slope to the west, at an average elevation of 5,415 feet above mean sea level (AMSL). The area is graded and clear of vegetation, however the surrounding area is covered by desert grasses and cacti. Access to the site is limited through a locked gate at the entrance to South Thunder Range.

The surficial geology at ER Site 56 is characterized by a veneer of aeolian sediments that are underlain by alluvial fan or alluvial deposits. Based on drilling records of similar deposits at KAFB, the alluvial materials are highly heterogeneous, composed primarily of medium to fine silty sands with frequent coarse sand, gravel, and cobble lenses. The alluvial deposits probably extend to the water-table. Vegetation consists predominantly of grasses including grama, muhly, dropseed, and galleta. Shrubs commonly associated with the grasslands include sand sage, winter fat, saltbrush, and rabbitbush. Cacti are common, and include cholla, pincushion, strawberry, and prickly pear.

The water-table elevation is approximately 4935 feet AMSL at this location, with a depth to groundwater of approximately 480 feet. Local groundwater flow is believed to be in a generally west to northwest direction. The nearest production well, KAFB-4, is northeast of the site and is approximately 5 miles away. The nearest groundwater monitor wells to the site are the group of wells installed around the Chemical Waste Landfill in the southeast corner of TA III. These wells are located approximately 0.6 miles northeast of ER Site 56.

ER Site 56 consisted of several (possibly six) wells measuring 20 ft deep, 8 ft in diameter and lined with 1/2 inch thick corrugated steel casing. Five wells were constructed at a location that is now on the south side of the 18-foot diameter [Large Shock Tube \(ER Site 89\)](#) about half way down the length of the tube, centered near the foot of the more easterly set of access steps to the top of the tube. Another well was constructed about 50 ft from the southeast corner of the fence around [ER Site 91 \(Lead Firing Site\)](#).

The tests associated with the Old Thunderwells were known as the "Bagpipe" tests. This testing program, jointly operated between SNL/NM and Lawrence Livermore National Laboratory (LLNL), was conducted between 1963 and 1971. Between 500 and 2,000 pounds of explosives for each test were placed in the bottom of the well and the test unit was placed near the top of the tube, where the blast pressures exerted several thousand pounds per square inch (psi). A bell shaped cavern was created in the bottom of each Thunderwell due to the force of the blasts. According to available information, there were 8 tests performed at the site, but there were only 5 documented Thunderwells on the site. It is believed that some of the tests may have been conducted in the above ground horizontal blast tubes at ER Site 89. After each test was performed, the casing was removed from the well and the remaining hole was collapsed and filled with soil from the surrounding area.

## Constituents of Concern

Trinitrotoluene (TNT)

HE

Well casing fragments and particulates

## Current Hazards

There are no current hazards at this site related to contamination of the surface or subsurface soils.

## Current Status of Work

Site background investigations and confirmatory sampling was completed. A confirmatory sampling no further action (NFA) proposal was submitted to New Mexico Environment Department (NMED) in October 1996. In December 1999, following review of SNLs response to a Request for Supplemental Information (RSI), NMED indicated that the site was acceptable for NFA. The NFA was approved by NMED in July 2000 after completing the public review and permit modification process.

## Future Work Planned

No additional work is planned.

## **Waste Volume Estimated/Generated**

No waste was generated.

**Information for ER Site 56 was last updated Jan 22, 2003.**